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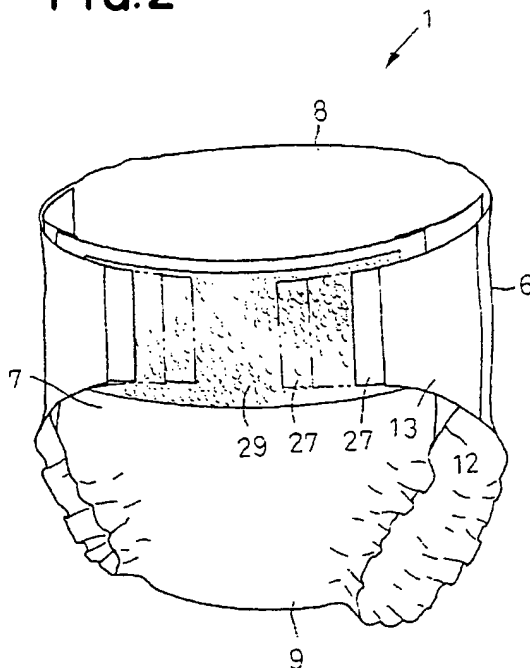
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(54) Disposable absorbent garment with extendible fastening means

(57) A disposable garment is provided with a pair of rear wings, the rear wings includes layer members which are extendible transversely of the garment and elastically stretchable strips bonded to the layer mem-

bers along upper and lower edges thereof extending transversely of the garment. Non-stretchable fasteners of a relatively high rigidity are attached to distal ends of the respective rear wings so as to extend transversely of the elastically stretchable strips and to overlap them.

FIG.2



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Description

This invention relates generally to disposable garments such as disposable diapers or training pants including a pair of wings provided with fastener means for separably coupling front and rear waist regions of the garment.

Japanese Laid-Open Utility Model Application No. Hei5-65321 discloses a disposable diaper having a pair of wings extending outward from transversely opposite side edges of a rear waist region of the diaper. Each of these wings is provided along its upper and lower edges extending in parallel to a waist line of the diaper with elastic members bonded thereto under an appropriate tension. Fastener means are formed on outer ends of the wing in alignment with the longitudinal axes of the respective elastic members and used for separably coupling front and rear waist regions of the diaper together.

With the diaper of prior art as has been described above, undesirable gathers are formed in the wings as the elastic members contract. Such gathers inevitably give a wearer uncomfortably rough touch when these gathers come in contact with the wearer's skin. In addition, the upper and lower edges of the wings extending along the elastic members are liable to be curved outwardly of the wearer's body. These edges thus curved outward readily come in contact with the wearer's arms, not only obstructing free movement of the arms but also deteriorate the appearance of the diaper.

In view of the problem as has been described above, it is a principal object of the invention to provide a disposable diaper allowing both the gathers and the outward curving which have conventionally appeared in the wings to be eliminated and thereby allowing a feeling to wear the diaper as well as the appearance to be improved.

The object set forth above is achieved, according to the invention, by a disposable garment comprising a main body having a transverse direction defining the wearer's waist regions and a longitudinal direction orthogonal to said transverse direction, said main body being assembled from a liquid-permeable topsheet, a liquid-impermeable backsheet and a liquid-absorbent core disposed between these two sheets, said main body having front and rear waist regions with respect to said longitudinal direction and a crotch region extending between these waist regions; a pair of wings extending outward in said transverse direction from side edges opposed to each other in said transverse direction of at least one of said front waist region or said rear waist region; and fastener means attached to respective distal ends of said wings for separably coupling said front and rear waist regions to each other, wherein: said wings respectively comprise layer members being extendible in said transverse direction and elastically stretchable strips placed along upper and lower edges of said layer members extending in said transverse direction and having a stretch stress higher than that of said layer

members; and said fastener means are non-stretchable and more rigid than said wings wherein said fastener means are attached to said distal ends of so as to extend in said longitudinal direction and to overlap said elastically stretchable strips.

Preferably, said fastener means extend in said longitudinal direction across entire widths of said wings and said elastically stretchable strips comprise hot melt adhesive.

Embodiments of the invention are described below.

Fig. 1 is a plan view showing a disposable garment according to the invention implemented in the form of a disposable diaper as partially broken away; Fig. 2 is a perspective view showing the diaper as in a configuration when it is put on the wearer's body; and Fig. 3 is a fragmentary scale-enlarged view showing an important part of Fig. 1 as partially broken away.

Details of a disposable garment will be more fully understood from the description of a disposable diaper as a specific embodiment of the invention given hereunder with reference to the accompanying drawings.

Fig. 1 is a plan view showing an inner side of a disposable diaper as partially broken away and Fig. 2 is a perspective view showing the diaper 1 as assembled for actual use.

The diaper 1 generally comprises a main body 6, a pair of front wings 12 and a pair of rear wings 13 extending laterally from said main body 6. The main body 6 has a transverse direction, i.e., a circumferential direction with respect to the wearer, a longitudinal direction which is orthogonal to the transverse direction and a thickness direction which is perpendicular to the plane defined by Fig. 1. In the thickness direction, the main body 6 comprises a laminate consisting of a liquid-permeable topsheet 2, a liquid-impermeable backsheet 3 and a liquid-absorbent core 4 disposed between these two sheets 2, 3. In its configuration, the main body 6 has a front waist region 7, a rear waist region 8 and a crotch region 9 extending between these waist regions 7, 8. Both the front and rear waist regions 7, 8 are provided with the pair of front wings 12 and the pair of rear wings 13 extending laterally from transversely opposite side edges of these waist regions 7, 8. Each of these front and rear wings 12, 13 is defined by a proximal end 26A, a distal end 26B, an upper edge 28A and a lower edge 28B. The lower edge 28B obliquely extends so that the wing may be tapered from the proximal end 26A toward the distal end 26B. The respective wings 12, 13 have their proximal ends 26A fixed to the main body 6 by well known bonding means such as an adhesive agent or heat-sealing technology (not shown) so that these wings 12, 13 may form transversely opposite side portions of the waist regions as the diaper 1 is put on the wearer's body. The pair of rear wings 13 are adapted to be extendible transversely of the main body 6, as indicated by imagi-

nary lines in Figs. 1 and 2. The pair of front wings 12 may be selectively arranged to be extendible or not, transversely of the main body 6.

Regarding the main body 6, the topsheet 2 and the backsheet 3 extend outward beyond a peripheral edge of the absorbent core 4 and are bonded together along these extensions by means of a hot melt adhesive agent (not shown) so as to form transversely opposite side flaps 11 and longitudinally opposite ends 17, 18. Each of the side flaps 11 at least in the crotch region 9 includes a plurality of elastic members 19 longitudinally extending between the topsheet 2 and the backsheet 3 and bonded under their longitudinally stretched conditions to an inner surface of at least one of the topsheet 2 and the backsheet 3.

Fig. 3 is a fragmentary plan view showing, in an enlarged scale, an important part of Fig. 1. As shown, the rear wing 13 is stretchable at least transversely of the diaper 1. More specifically, the rear wing 13 comprises an inner layer member 21 intended to come in contact with the wearer's skin, an outer layer member 22 opposed to the inner layer member 21, first and second elastically stretchable strips 23, 24 disposed between these the inner and outer layer members 21, 22 so that the first and second elastically stretchable strips 23, 24 function also as adhesive means by which the inner and outer layer members 21, 22 are bonded together, and a hook fastener 27 attached to the distal end 26B of the wing 13. The hook fastener 27 makes a part of so-called mechanical fastener means consisting of hook and loop fasteners commonly known under the trademark "VEL-CRO". The loop fastener 29 cooperating with the hook fastener 27 is attached to an outer surface of the front waist region 7 in a landing zone of the hook fastener 27 (see Fig. 2).

The inner and outer layer members 21, 22 may be of a sheet material which is extendible transversely of the diaper 1 by 30 % or more, preferably 50 % or more and more preferably 100 % or more. Such sheet material may be replaced by a sheet material which is elastically stretchable by 30 % or more, preferably 50 % or more and more preferably 100 % or more. Such sheet material may be extendible or elastically stretchable a nonwoven fabric, an elastomer film, a rubber film or the like. The inner and outer layer members 21, 22 are bonded together not only by means of the first and second elastically stretchable strips 23, 24 but also by means of an adhesive agent intermittently applied on the inner and outer layer members 21, 22 or intermittently formed heat-sealing spots on these members 21, 22 so that the extendibility or elastic stretchability of these members 21, 22 is not affected by bonding of these members 21, 22. The inner and outer layer members 21, 22 are preferably of breathable nature.

The first and second elastically stretchable strips 23, 24 are provided along upper and lower edges 28A, 28B, respectively, of each rear wing 13, both extending transversely of this wing 13, to make these edges elas-

tically stretchable. The first and second elastically stretchable strips 23, 24 are made of material selected so that, when a sample strip of this material is stretched by 50 % transversely of the diaper 1, it generates a stress higher than a stress generated by the inner and outer layer members 21, 22 under the same condition. At the same time, this material should have an elastically stretchability of 50 % or higher and more preferably 100 % or higher, transversely of the diaper 1. An example of such material is a hot melt adhesive agent made of ethylene elastomer- or urethane-based polymer, which may be applied to an inner surface of any one of the inner and outer layer members 21, 22. This hot melt adhesive agent is disposed between the inner and outer layer members 21, 22 under no tension and thus the inner and outer layer members 21, 22 are bonded together with no tension. Alternatively, a strip of elastically stretchable film such as an elastomer film may be used as said material of the first and second elastically stretchable strips 23, 24. In this case also, the strip of film and the inner and outer layer members 21, 22 are bonded together with no tension so that they may be free to be elastically stretched. Such unique manner in which the inner layer member 21, the outer layer member 22, the first elastically stretchable strip 23 and second elastically stretchable strip 24 are bonded together is effective to avoid the formation of gathers in the rear wing 13 no matter what material is employed for the first and second elastically stretchable strips 23, 24.

The fastener 27 is preferably attached to the distal end 26B of the rear wing 13 so as to extend vertically of the rear wing 13 and to overlap both the first elastically stretchable strip 23 and the second elastically stretchable strip 24. While the fastener 27 is shown to be attached to the inner layer member 21 defining an inner side of the diaper 1, the fastener 27 may be attached any one of the inner and outer layer members 21, 22. The fastener 27 should have a rigidity higher than that of the rear wing 13 and should be non-stretchable. When the rear wings 13 are pulled toward the front waist region 7 with such fasteners 27 held by a wearer or a helper, the resultant tension uniformly propagates over an entire width of each rear wing 13 without any local concentration of said tension. Accordingly, the rear wings 13 and the end flap 18 of the diaper 1 connected to the wings 13 are not curved outwardly of the wearer's body even after the fasteners 27 have been anchored on the respective loop fasteners 29 provided on the front waist region 7. The fastener 27 employed to implement the invention is not limited to the mechanical fastener as employed in the illustrated embodiment and it is also possible to employ the well-known fastener of adhesive type. In the case of the adhesive fastener, the loop fastener 29 will be unnecessary.

With the diaper 1 according to the invention, the pair of rear wings 13 each comprising the inner and outer layer members 21, 22 facilitate both surfaces of the wings to provide a comfortable touch. However, the

wings may be formed by any one of these inner and outer layer members so far as a touch of the wings is considered to be not so important. It is also possible to implement the invention by attaching the fasteners 27 to the pair of front wings 12 rather than to the pair of rear wings 13.

Each of the wings of the inventive garment comprises the extendible sheet members and the elastically stretchable strips respectively extending along the upper and lower edges of these sheet members wherein these sheet members and strips are bonded together with no tension. Before as well as after its extension, the wing of such construction is free from the formation of gathers which would deteriorate feeling to wear the garment as has conventionally been observed in the wing of prior art.

The relatively rigid and non-stretchable fastener member is attached to the distal end of each wing so as to extend transversely of the elastically stretchable strips. The wing can be stretched uniformly over its entire width as the wing is stretched with this fastener member held by the wearer or the helper without any apprehension that the wing and the end flap of the garment connected to the wing might be curved outwardly of the wearer's body.

direction and to overlap said elastically stretchable strips.

2. The garment according to Claim 1, wherein said fastener means extend in said longitudinal direction across entire widths of said wings.
3. The garment according to Claim 1 or 2, wherein said elastically stretchable strips comprise a hot melt adhesive agent.

Claims

1. Disposable garment comprising a main body having a transverse direction defining the wearer's waist regions and a longitudinal direction orthogonal to said transverse direction, said main body being assembled from a liquid-permeable topsheet, a liquid-impermeable backsheet and a liquid-absorbent core disposed between these two sheets, said main body having front and rear waist regions with respect to said longitudinal direction and a crotch region extending between these waist regions; a pair of wings extending outward in said transverse direction from side edges opposed to each other in said transverse direction of at least one of said front waist region or said rear waist region; and fastener means attached to respective distal ends of said wings for separably coupling said front and rear waist regions to each other, wherein:

said wings respectively comprise layer members being extendible in said transverse direction and elastically stretchable strips placed along upper and lower edges of said layer members extending in said transverse direction and having a stretch stress higher than that of said layer members; and

said fastener means are non-stretchable and more rigid than said wings wherein said fastener means are attached to said distal ends of said wings so as to extend in said longitudinal

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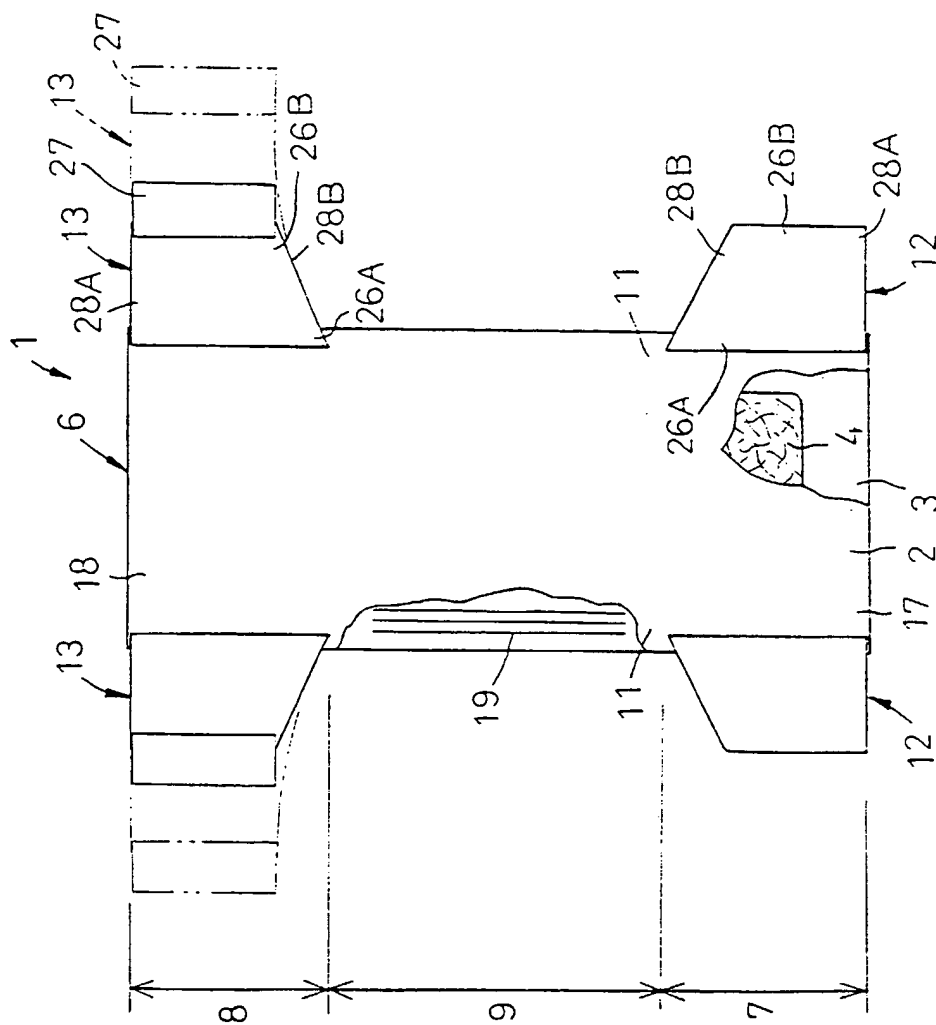
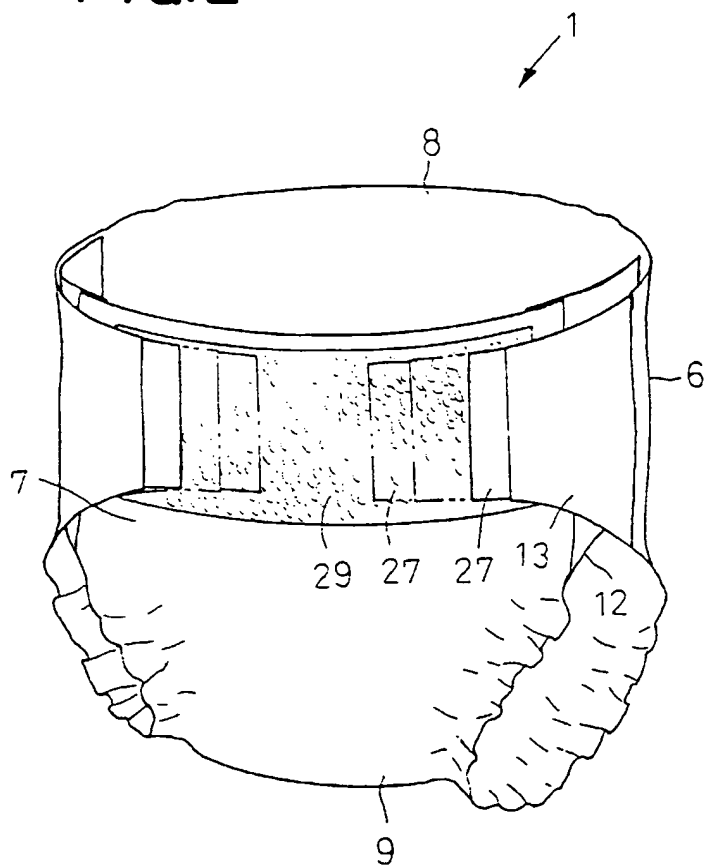


FIG.2



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